

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-22. (canceled)

23. (currently amended) A method of generating a modulated navigation signal (7) which is intended to be used to position a downlink receiver (6), comprising multiple pseudorandom navigation codes of chip rhythms greater than 0.5 MHz, modulated onto a carrier of frequency  $f_p$  greater than 500 MHz, wherein four distinct and independent pseudorandom navigation codes  $C_1$ ,  $C_2$ ,  $C_1'$ ,  $C_2'$  are modulated onto the carrier according to an 8-PSK modulation of constant amplitude with a modulation frequency  $f_M$  such that:

$$8f_c \leq f_M$$

where  $f_c = \text{Max}(f_{ci})$ , and  $f_{ci}$  designates the chip rhythms  $f_{c1}$ ,  $f_{c1}'$ ,  $f_{c2}$ ,  $f_{c2}'$  of the navigation codes  $C_1$ ,  $C_2$ ,  $C_1'$ ,  $C_2'$ , each  $f_{ci}$  value being such that  $f_M = N_i \cdot f_{ci}$ ,  $N_i$  being an integer greater than or equal to 8, two navigation codes  $C_1$ ,  $C_1'$  being quadrature modulated at frequency  $f_1 = f_p - f_M/8$ , and two other navigation codes  $C_2$ ,  $C_2'$  being quadrature modulated at

frequency  $f_2 = f_p + f_M/8$ , and the modulated navigation signal presenting a constant envelope,  
wherein one of i) 8-PSK modulation of symmetrical constant amplitude in the Fresnel plan is used, and ii) 8-PSK modulation of asymmetrical constant amplitude in the Fresnel plan is used.

24. (previously presented) A method as claimed in claim 23, wherein  $f_M$  is chosen to be  $\leq 400$  MHz.

25. (previously presented) A method as claimed in claim 23, for generating a modulated navigation signal (7) on board a space satellite, wherein  $f_M$  is chosen to be  $\leq 200$  MHz.

26. (previously presented) A method as claimed in claim 23, wherein 8-PSK modulation of symmetrical constant amplitude in the Fresnel plan is used.

27. (previously presented) A method as claimed in claim 23, wherein 8-PSK modulation of asymmetrical constant amplitude in the Fresnel plan is used.

28. (previously presented) A method as claimed in claim 23, wherein 8-PSK modulation of phase states equal to  $k \cdot \pi/4$ , where  $k$  is an integer between 1 and 8, is used.

29. (previously presented) A method as claimed in claim 23, wherein the four codes are modulated according to a truth table which is chosen from the group of truth tables formed from:

TABLE 1

C1(t)	-1	-1	-1	-1	-1	-1	-1	-1	1	1	1	1	1	1	1	1
C2(t)	-1	-1	-1	-1	1	1	1	1	-1	-1	-1	-1	1	1	1	1
C1'(t)	-1	-1	1	1	-1	-1	1	1	-1	-1	1	1	-1	-1	1	1
C2'(t)	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1
t modulo 8TM																
[0, TM[	P5	P4	P4	P3	P6	P7	P5	P2	P6	P1	P3	P2	P7	P8	P8	P1
[TM, 2TM[	P5	P8	P4	P3	P6	P7	P5	P6	P2	P1	P3	P2	P7	P8	P4	P1
[2TM, 3TM[	P1	P8	P4	P7	P6	P7	P5	P6	P2	P1	P3	P2	P3	P8	P4	P5
[3TM, 4TM[	P1	P8	P8	P7	P2	P7	P5	P6	P2	P1	P3	P6	P3	P4	P4	P5
[4TM, 5TM[	P1	P8	P8	P7	P2	P3	P1	P6	P2	P5	P7	P6	P3	P4	P4	P5
[5TM, 6TM[	P1	P4	P8	P7	P2	P3	P1	P2	P6	P5	P7	P6	P3	P4	P8	P5
[6TM, 7TM[	P5	P4	P8	P3	P2	P3	P1	P2	P6	P5	P7	P6	P7	P4	P8	P1
[7TM, 8TM[	P5	P4	P4	P3	P6	P3	P1	P2	P6	P5	P7	P2	P7	P8	P8	P1

TABLE 2

C1(t)	-1	-1	-1	-1	-1	-1	-1	-1	1	1	1	1	1	1	1	1
C2(t)	-1	-1	-1	-1	1	1	1	1	-1	-1	-1	-1	1	1	1	1
C1'(t)	-1	-1	1	1	-1	-1	1	1	-1	-1	1	1	-1	-1	1	1
C2'(t)	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1
t modulo 8TM																
[0, TM[	P1	P8	P4	P7	P6	P7	P5	P6	P2	P1	P3	P2	P3	P8	P4	P5
[TM, 2TM[	P1	P8	P8	P7	P2	P7	P5	P6	P2	P1	P3	P6	P3	P4	P4	P5

[2TM, 3TM[	P1	P8	P8	P7	P2	P3	P1	P6	P2	P5	P7	P6	P3	P4	P4	P5
[3TM, 4TM[	P1	P4	P8	P7	P2	P3	P1	P2	P6	P5	P7	P6	P3	P4	P8	P5
[4TM, 5TM[	P5	P4	P8	P3	P2	P3	P1	P2	P6	P5	P7	P6	P7	P4	P8	P1
[5TM, 6TM[	P5	P4	P4	P3	P6	P3	P1	P2	P6	P5	P7	P2	P7	P8	P8	P1
[6TM, 7TM[	P5	P4	P4	P3	P6	P7	P5	P2	P6	P1	P3	P2	P7	P8	P8	P1
[7TM, 8TM[	P5	P8	P4	P3	P6	P7	P5	P6	P2	P1	P3	P2	P7	P8	P4	P1

where P1, P2, P3, P4, P5, P6, P7, P8 are the various contacts and the 8-PSK constellation, and TM = 1/fM, and other truth tables derived from these truth tables TABLE 1 and TABLE 2 by phase rotation by  $n \cdot \pi/4$ ,  $n \in \{1, 2, 3, 4, 5, 6, 7\}$  and/or reversal of the direction of the path of the constellation.

30. (previously presented) A method as claimed in claim 23, wherein fp is between 1000 MHz and 1700 MHz.

31. (previously presented) A method as claimed in claim 23, wherein fc is of the order of 10 MHz.

32. (previously presented) A method as claimed in claim 23, wherein fM is of the order of 120 MHz.

33. (currently amended) A method ~~as claimed in claim 23~~ of generating a modulated navigation signal (7) which is intended to be used to position a downlink receiver (6), comprising multiple pseudorandom navigation codes of chip rhythms greater than 0.5 MHz, modulated onto a carrier of

frequency  $f_p$  greater than 500 MHz, wherein four distinct and independent pseudorandom navigation codes  $C_1$ ,  $C_2$ ,  $C_1'$ ,  $C_2'$  are modulated onto the carrier according to an 8-PSK modulation of constant amplitude with a modulation frequency  $f_M$  such that:

$$\underline{8f_c \leq f_M}$$

where  $f_c = \text{Max}(f_{ci})$ , and  $f_{ci}$  designates the chip rhythms  $f_{c1}$ ,  $f_{c1'}$ ,  $f_{c2}$ ,  $f_{c2'}$  of the navigation codes  $C_1$ ,  $C_2$ ,  $C_1'$ ,  $C_2'$ , each  $f_{ci}$  value being such that  $f_M = N_i \cdot f_{ci}$ ,  $N_i$  being an integer greater than or equal to 8, two navigation codes  $C_1$ ,  $C_1'$  being quadrature modulated at frequency  $f_1 = f_p - f_M/8$ , and two other navigation codes  $C_2$ ,  $C_2'$  being quadrature modulated at frequency  $f_2 = f_p + f_M/8$ , and the modulated navigation signal presenting a constant envelope, wherein in at least one pair of codes  $C_1$ ,  $C_1'$ ;  $C_2$ ,  $C_2'$  which are quadrature modulated onto the same frequency, one of said codes  $C_1'$ ;  $C_2'$  incorporates digital data which is modulated according to a frequency less than  $f_c/1000$ .

34. (currently amended) A device for generating a modulated navigation signal which is intended to be used to position a downlink receiver, comprising multiple pseudorandom navigation codes of chip rhythms greater than 0,5 MHz,

modulated onto a carrier of frequency  $f_p$  greater than 500 MHz,  
this device comprising:

- a circuit to generate pseudorandom navigation codes,
- a phase-shifting modulator circuit which supplies the  
modulated navigation signal on the carrier,
- an emitter circuit, comprising at least one power  
amplification stage, and suitable for emitting a radio  
frequency signal corresponding to the modulated  
navigation signal,

wherein the modulator circuit is suitable for modulating, on  
the carrier, four distinct and independent pseudorandom  
navigation codes  $C_1$ ,  $C_2$ ,  $C_1'$ ,  $C_2'$  of which the frequencies are  
an integer multiple of one of them  $f_c$ , according to an 8-PSK  
modulation of constant amplitude with a modulation frequency  
 $f_M$  such that:

$$8f_c \leq f_M$$

where  $f_c = \text{Max}(f_{ci})$ , and  $f_{ci}$  designates the chip rhythms  $f_{c1}$ ,  
 $f_{c1}'$ ,  $f_{c2}$ ,  $f_{c2}'$  of the navigation codes  $C_1$ ,  $C_2$ ,  $C_1'$ ,  $C_2'$ , each  
 $f_{ci}$  value being such that  $f_M = N_i.f_{ci}$ ,  $N_i$  being an integer

greater than or equal to 8, two navigation codes  $C1$ ,  $C1'$  being quadrature modulated at frequency  $f1 = fp - fM/8$ , and two other navigation codes  $C2$ ,  $C2'$  being quadrature modulated at frequency  $f2 = fp + fM/8$ , and the modulated navigation signal presenting a constant envelope,

wherein one of i) wherein the modulator circuit is suitable for implementing 8-PSK modulation of symmetrical constant amplitude in the Fresnel plan and 8-PSK modulation of symmetrical constant amplitude in the Fresnel plan is used, and ii) the modulator circuit is suitable for implementing 8-PSK modulation of asymmetrical constant amplitude in the Fresnel plan and 8-PSK modulation of asymmetrical constant amplitude in the Fresnel plan is used.

35. (previously presented) A device as claimed in claim 34, wherein the modulator circuit is suitable for implementing an 8-PSK modulation with a modulation frequency  $fM \leq 400$  MHz.

36. (previously presented) A device as claimed in claim 34, wherein the modulator circuit is suitable for implementing an 8-PSK modulation with a modulation frequency  $fM \leq 200$  MHz.

37. (currently amended) A device as claimed in claim 34, wherein the modulator circuit is suitable for implementing 8-PSK modulation of symmetrical constant amplitude in the Fresnel plan and the 8-PSK modulation of symmetrical constant amplitude in the Fresnel plan is used.

38. (currently amended) A device as claimed in claim 34, wherein the modulator circuit is suitable for implementing 8-PSK modulation of asymmetrical constant amplitude in the Fresnel plan and the 8-PSK modulation of asymmetrical constant amplitude in the Fresnel plan is used.

39. (previously presented) A device as claimed in claim 34, wherein the modulator circuit is suitable for implementing 8-PSK modulation of phase states equal to  $k \cdot \pi/4$ , where  $k$  is an integer between 1 and 8.

40. (previously presented) A device as claimed in claim 34, wherein the modulator circuit is suitable for modulating the four codes according to a truth table which is chosen from the group of truth tables formed from:



TABLE 1

$C1(t)$	-1	-1	-1	-1	-1	-1	-1	-1	1	1	1	1	1	1	1	1
$C2(t)$	-1	-1	-1	-1	1	1	1	1	-1	-1	-1	-1	1	1	1	1
$C1'(t)$	-1	-1	1	1	-1	-1	1	1	-1	-1	1	1	-1	-1	1	1
$C2'(t)$	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1
t modulo 8TM																
$[0, TM[$	P5	P4	P4	P3	P6	P7	P5	P2	P6	P1	P3	P2	P7	P8	P8	P1
$[TM, 2TM[$	P5	P8	P4	P3	P6	P7	P5	P6	P2	P1	P3	P2	P7	P8	P4	P1
$[2TM, 3TM[$	P1	P8	P4	P7	P6	P7	P5	P6	P2	P1	P3	P2	P3	P8	P4	P5
$[3TM, 4TM[$	P1	P8	P8	P7	P2	P7	P5	P6	P2	P1	P3	P6	P3	P4	P4	P5
$[4TM, 5TM[$	P1	P8	P8	P7	P2	P3	P1	P6	P2	P5	P7	P6	P3	P4	P4	P5
$[5TM, 6TM[$	P1	P4	P8	P7	P2	P3	P1	P2	P6	P5	P7	P6	P3	P4	P8	P5
$[6TM, 7TM[$	P5	P4	P8	P3	P2	P3	P1	P2	P6	P5	P7	P6	P7	P4	P8	P1
$[7TM, 8TM[$	P5	P4	P4	P3	P6	P3	P1	P2	P6	P5	P7	P2	P7	P8	P8	P1

TABLE 2

$C1(t)$	-1	-1	-1	-1	-1	-1	-1	-1	1	1	1	1	1	1	1	1
$C2(t)$	-1	-1	-1	-1	1	1	1	1	-1	-1	-1	-1	1	1	1	1
$C1'(t)$	-1	-1	1	1	-1	-1	1	1	-1	-1	1	1	-1	-1	1	1
$C2'(t)$	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1
t modulo 8TM																
$[0, TM[$	P1	P8	P4	P7	P6	P7	P5	P6	P2	P1	P3	P2	P3	P8	P4	P5
$[TM, 2TM[$	P1	P8	P8	P7	P2	P7	P5	P6	P2	P1	P3	P6	P3	P4	P4	P5
$[2TM, 3TM[$	P1	P8	P8	P7	P2	P3	P1	P6	P2	P5	P7	P6	P3	P4	P4	P5
$[3TM, 4TM[$	P1	P4	P8	P7	P2	P3	P1	P2	P6	P5	P7	P6	P3	P4	P8	P5
$[4TM, 5TM[$	P5	P4	P8	P3	P2	P3	P1	P2	P6	P5	P7	P6	P7	P4	P8	P1
$[5TM, 6TM[$	P5	P4	P4	P3	P6	P3	P1	P2	P6	P5	P7	P2	P7	P8	P8	P1
$[6TM, 7TM[$	P5	P4	P4	P3	P6	P7	P5	P2	P6	P1	P3	P2	P7	P8	P8	P1
$[7TM, 8TM[$	P5	P8	P4	P3	P6	P7	P5	P6	P2	P1	P3	P2	P7	P8	P4	P1

where P1, P2, P3, P4, P5, P6, P7, P8 are the various contacts and the 8-PSK constellation, and  $T_M = 1/f_M$ , and other truth tables derived from these truth tables TABLE 1 and TABLE 2 by phase rotation by  $n \cdot \pi/4$ ,  $n \in \{1, 2, 3, 4, 5, 6, 7\}$  and/or reversal of the direction of the path of the constellation.

41. (previously presented) A device as claimed in claim 34, wherein  $f_p$  is between 1000 MHz and 1700 MHz.

42. (previously presented) A device as claimed in claim 34, wherein  $f_c$  is of the order of 10 MHz.

43. (previously presented) A device as claimed in claim 34, wherein  $f_M$  is of the order of 120 MHz.

44. (previously presented) A device as claimed in claim 34, which is adapted so that in at least one pair of codes which are quadrature modulated onto the same frequency, one of said codes C1', C2' incorporates digital data which is modulated according to a frequency less than  $f_c/1000$ .